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Ypsilomyces, a new thallic genus of conidial fungi from the semi-arid Caatinga biome of Brazil

Davi Augusto Carneiro de Almeida* &
Luís Fernando Pascholati Gusmão

Universidade Estadual de Feira de Santana,
Av. Transnordestina, S/N – Novo Horizonte, 44036-900. Feira de Santana, BA, Brazil

* Correspondence to: *daviaugusto@gmail.com*

Abstract — During research on conidial fungi from the semi-arid region of Brazil, a unique specimen was collected on decaying leaves. *Ypsilomyces elegans* gen. et sp. nov. is characterized by macronematous mononematous conidiophores occurring on pseudoparenchymatous tissue, terminal conidiogenous cells extending percurrently, and thallic septate Y-shaped subhyaline conidia. Descriptions, illustrations, and comments are provided.

Key words — biodiversity, hyphomycetes, tropical microfungi

Introduction

Studies conducted in the semi-arid region of Brazil in the beginning of this century have revealed several novel taxa and new records of conidial fungi (Barbosa & Gusmão 2005, Barbosa et al. 2007, 2013, Cruz et al. 2007, 2012, Gusmão et al. 2008, Almeida et al. 2011, 2012, 2013, Santa Izabel et al. 2013). The Program of Research on Biodiversity in the Brazilian semi-arid (PPBIO) has contributed to the knowledge on biodiversity of fungi in Brazil by funding the majority of the aforementioned researches. Although several new taxa of fungi have been reported, this region continues to be a rich source of novel taxa.

During a survey of conidial fungi on plant debris in an area of extreme biological importance in the Brazilian semi-arid region (Velloso et al. 2002), an interesting specimen was found. Since its morphological features did not match any known genera of conidial fungi, a new genus is established herein.

Materials & methods

Samples of decaying leaves were collected at Serra da Fumaça, Pindobaçu, Bahia state, during August–December 2008. Description of the study area and methods for

specimen collection, isolation, and morphological examination are provided in Almeida et al. (2011). Fungal structures were measured using a BX51 Olympus microscope equipped with bright field and Nomarski interference optics; images were photographed with a DP25 Olympus digital camera and processed using Adobe Photoshop CS6 and Image J. Drawings were made directly from digital images using the technique described by Barber & Keane (2007). The holotype specimen was deposited in the Herbarium of Universidade Estadual de Feira de Santana (HUEFS). An attempt was made to cultivate the fungus but unfortunately we did not have success.

Taxonomy

Ypsilomyces D.A.C. Almeida & Gusmão, **gen. nov.** Figs. 1, 2

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Differs from *Biflagellospora*, *Diademospora*, *Diplocladiella*, *Iyengarina*, *Vanterpoolia*, and *Weufia* by thallic conidiogenesis.

Type species: *Ypsilomyces elegans* D.A.C. Almeida & Gusmão

Etymology: from the Latin, *ypsilon*, referring to the Y-shaped conidia and the Greek, *myces*, referring to fungus.

Conidiophores macronematous, mononematous, unbranched or branched, cylindrical, erect, straight or flexuous, septate, smooth, pale brown to brown. Stromata pseudoparenchymatous, brown to dark brown. Conidiogenous cells terminal, cylindrical, smooth, pale brown, with enteroblastic percurrent extension that produce fertile branches, which forming thallic-arthric conidia after disarticulation. Conidia thallic-arthric, single, dry, smooth, septate, usually more or less dichotomous branched, Y-shaped, furcated or cylindrical, subhyaline, produced after disarticulation of the fertile branches.

Ypsilomyces elegans D.A.C. Almeida & Gusmão, **sp. nov.** Figs 1, 2

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Differs from *Diplocladiella scalaroides* and *Iyengarina elegans* by its holothallic, subhyaline, usually 1-septate conidia.

Type: Brazil, Bahia, Pindobaçu, Serra da Fumaça, on decaying leaf of an unidentified monocotyledonous plant, 18.XII.2008, D.A.C. Almeida (**holotype** HUEFS 155081).

Etymology: Latin, *elegans*, meaning elegant.

Conidiophores macronematous, mononematous, grouped, unbranched or branched, cylindrical, erect, straight or flexuous, septate, thick walled, smooth, brown at base, pale brown towards the apex, 22.5–425 × 3.5–6 µm, arising from dark brown, pseudoparenchymatous stromata. Conidiogenous cells terminal, cylindrical, thin-walled, smooth, pale brown, with several enteroblastic percurrent extension which produce fertile dichotomous branches, that form conidia by thallic-arthric disarticulation. Conidia thallic-arthric, single, dry, smooth, 1(–3)-septate, asymmetric, branched, Y-shaped,

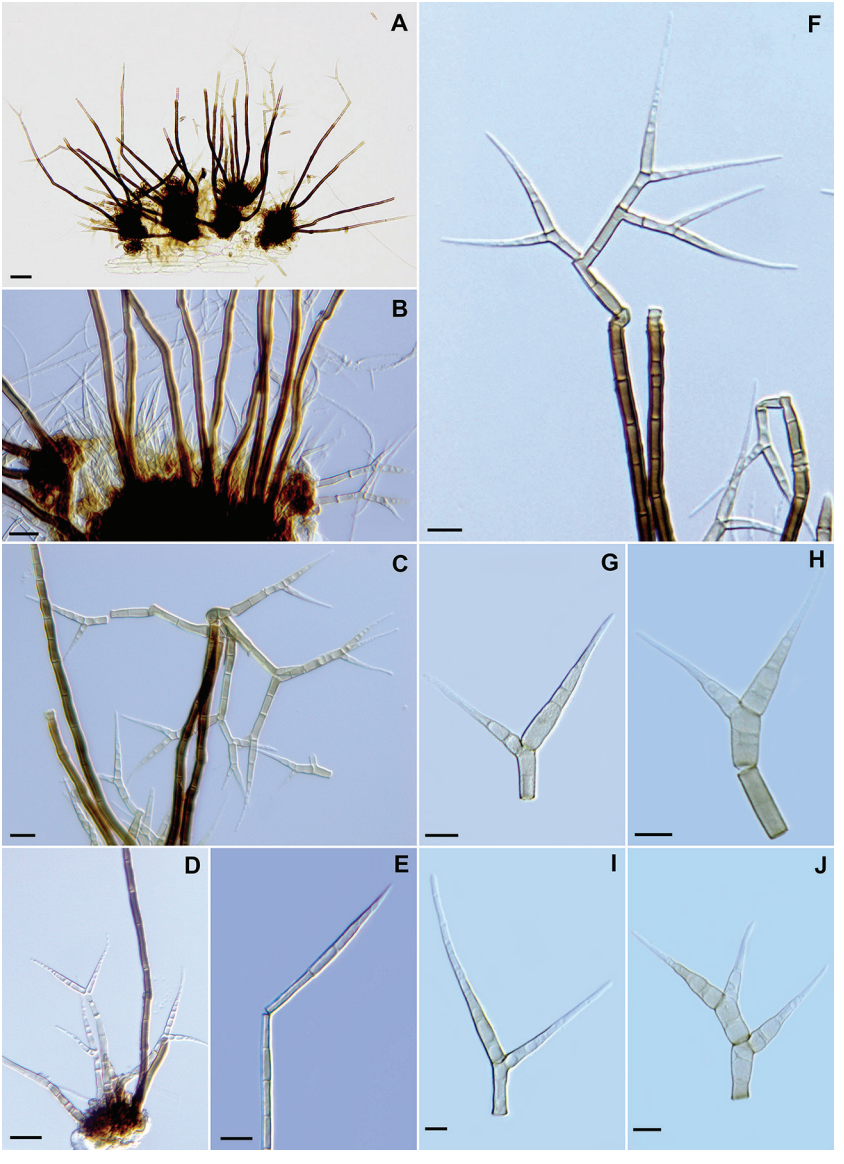

Fig. 1. *Ypsilomyces elegans* (holotype HUEFS 155081): A. Conidiophore and conidia on leaf surface. B. Short conidiophores with conidia and base of long conidiophores. C. Conidiogenous cells with conidia. D. Short conidiophores with conidia. E. Unbranched conidium disarticulating from conidiophore apex. F. Conidiogenous cells with conidia and showing percurrent extension. G–J. Conidia. Scale bars: A = 50 µm; B, D = 20 µm; C = 15 µm; E, F = 10 µm; G–J = 5 µm.

Fig. 2. *Ypsilomyces elegans* (holotype HUEFS 155081): A: General aspect. B: Conidia.

rarely simple or furcate, subhyaline, guttulate, 27–60 × 2.5–5 µm; branches subulate, 14–51 × 2–5 µm.

Comments: Other fungi characterized by Y-shaped conidia include *Biflagellospora* Matsush., *Diademospora* B.E. Söderstr. & Bååth, *Diplocladiella* G. Arnaud ex M.B. Ellis, *Iyengarina* Subram., *Vanterpoolia* A. Funk, *Weufia* Bhat & B. Sutton and *Ypsilina* J. Webster et al. *Ypsilomyces* differs from all these genera by its thallic conidiogenesis and by producing conidiophores on a pseudoparenchymatous stroma. Except for *Weufia* (with tretic conidiogenesis; Bhat & Sutton 1985), all aforementioned genera produce conidia holoblastically. *Vanterpoolia* also produces pseudoparenchymatous stromata, but the stroma is reduced in *Ypsilomyces*, whereas in *Vanterpoolia* it forms a well developed sporodochium (Funk 1982). Moreover, *Vanterpoolia* produces conidia in acropetal chains. *Ypsilomyces* can also be diagnosed by its conidiogenous cells that extend percurrently among successive productions of fertile dichotomous branches, which form thallic-arthric conidia after disarticulation. *Diplocladiella* and *Biflagellospora* differ by the sympodial extension of their conidiogenous cells (Matsushima 1975, Ellis 1976, Sivichai & Hywel-Jones 1999). Although the conidiogenous cells of *Iyengarina* can also extend percurrently, its conidia are produced holoblastically (Kuthubutheen & Nawawi 1992). Other distinctive characteristics of *Ypsilomyces* are the conidiophores that vary greatly in length (22.5–425 µm) and which are pale brown and short when young and basally dematiaceous and long when old. In contrast, *Diademospora* and *Ypsilina* have inconspicuous conidiophores (Söderström & Bååth 1979, Descals et al. 1998).

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